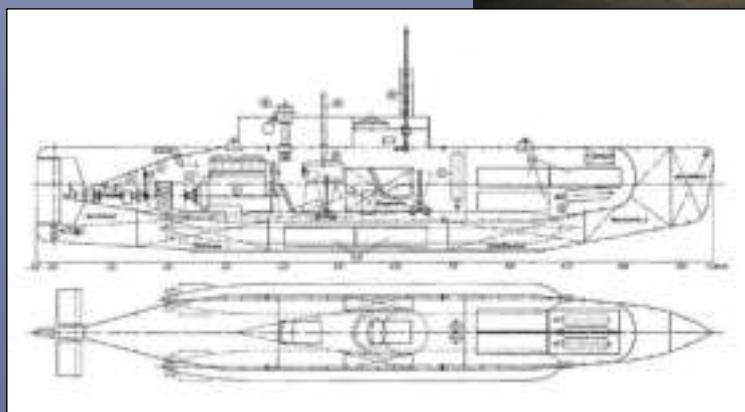


2013



PROJECT SEAHUND

The Search and Survey of U5377

Report written for British Sub-Aqua Jubilee Trust award 2012

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BRITISH SUB-AQUA JUBILEE TRUST



OPERATION SEAHUNDE
THE SEARCH AND SURVEY FOR *U5377*
Project Report

12 April 2013

Written
by
D.M.M^cElvogue

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2 OPERATION SEAHUNDE

3 THE SEARCH AND SURVEY OF U5377.

PROJECT BACKGROUND

Project Seahunde proposed to locate, positively identify then record the physical remains of *U5377* a unique German midget submarine. *U5377* is the only known operational Seahunde to have been sunk in UK territorial waters during an action (11 March, 1945). Having a known date of sinking allows for a study of the colonisation of the submarine and will allow for an understanding of the colonisation of such manmade structures on the seabed. Therefore the marine flora and fauna growing on and around *U5377* was to be recorded. The recording of the flora and fauna will also act as a biological standard for the area and for the planned marine zone of the Goodwin Sands.

INTRODUCTION

Historical Background

In December 1944 the German navy launched its new secret weapon, the Seahunde (seal) midget submarine. By the start of the New Year the German Navy had 24 Seahundes at its disposal for Operation Debut, their first active patrols. On New Years Day 1945 seventeen Seahundes sailed from their base in IJmuiden in the Netherlands to attack a convoy off the Kwinte Bank. The first victim of a successful Seahunde attack was the trawler Hayburn Wyke wrecked off the Netherlands. This was the start of a new and possibly deadly onslaught on allied coastal shipping by the Nazi. However, during the first three months of 1945 when the Seahundes carried out 62 sorties they only sank 5 ships and damaged one. Their losses were high with 35 never returning to their bases. The deadly threat of the Seahundes was nullified by the titanic efforts of the ships, boats and crews of Coastal Forces of the Royal Navy.

Coastal Forces Operations during World War II

The Coastal Forces of WW II were established in 1940 as a division of the Royal Navy under the command of Rear Admiral Coastal Forces and were headquartered at *HMS Vernon*, Portsmouth. The Coastal Forces primarily operated in the English Channel and North Sea, especially in the build up to the Normandy invasion of July, 1944. Afterwards they ensured supplies crossed the channel to maintain the invasion forces push into occupied territory. The Coastal Forces were also used in the Mediterranean and

Norwegian campaigns. Their operations included;

- raids on St Nazaire and Dieppe,
- the attack of German convoys and their E-Boat escorts,
- clandestine raids and landings and the pick up secret agents in Norway and Brittany.

By 1944 Coastal Forces numbered 3,000 officers and 22,000 ratings manning the 2,000 British Coastal Forces craft. The Coastal Forces were manned by various Allied nationalities including; Dutch, Norwegian, Canadian, Australian and New Zealanders. There were four types of coastal defence craft during World War II:

- Motor Torpedo Boats (MTBs),
- Motor Gun Boats (MGBs),
- Motor Launches (MLs),
- and Harbour Defence Motor Launches (HDMLs).

The main craft employed were the MTBs and the MGBs. As a group they were affectionately known as the Navy's "Little Ships". These little ships fought over 780 actions and sank 800 enemy vessels, including 32 midget submarines. Of the 2,000 British Coastal Forces craft less the 10% (170) of the "Little Ships" were sunk or destroyed.

Coastal Forces Control Frigates

Prior to Operation Neptune (D-Day landings) the Royal Navy biggest threat was considered to be the German Coastal Forces consisting primarily of fast torpedo boats, called E-Boats by the Royal navy. These E-Boats could attain a speed of over 40 knots in calm water and 36 knots in rough weather. Being vulnerable to air attack the E-boats only operated at night, staying in their bunkers during the day. To counter this threat the Royal Navy decided to use Frigates fitted with radar as control ships; to track the E-Boats as soon as they left their base and then guide the MTB's and MGB's to them. This worked well as an experienced Coastal Forces Officer was placed in each of the Frigates, so they were competent in directing the MTB's and MGB's.

Buckley Class Frigates were chosen to act as Control Frigates because of their superior speed to other frigates of similar capability. An additional 2pdr Pom Pom Gun was added as a bow chaser for the expected close action. They were allocated to Coastal Forces and nominally attached to the First Destroyer Flotilla (DF) based at Portsmouth. Eight frigates were chosen and consisted of:

HMS Duff K352 (DE 64)

HMS Riou K557 (DE 92)

HMS Seymour K563 (DE 98)

HMS Torrington K577 (DE 568)

HMS Stayner K573 (DE 564)

HMS Retalick K555 (DE 90)

HMS Thornborough K574 (DE 565)

HMS Trollope K575 (DE 566)

HMS Torrington (K577)

HMS Torrington was a Captain-class frigate (Fig. 01). Originally constructed as a United States Navy Buckley class destroyer escort it was laid down (22 September, 1943) as the unnamed U.S. Navy destroyer escort DE-568 and built by Bethlehem-Hingham Shipyard, Inc. (Hingham, Massachusetts), being launched on 27, November 1943. The hull was then transferred to the United Kingdom upon completion on 18 January 1944 under the Lend Less agreement and commissioned into the Royal Navy as *HMS Torrington*. She served in the Royal from 1944 to 1946, returning to the U.S. Navy on 11 June, 1946 after a period in the reserve fleet in Londonderry.



Fig. 01 *HMS Torrington* off Dunoon, Scotland, in February 1944. (M^cElvogue).

Service History

HMS Torrington was commissioned into the Royal Navy under the command of Lieutenant Clement Francis Parker on 18 January, 1944. After a shakedown cruise to Casco Bay, Maine (USA) and Bermuda, she steamed to St. John's and Naval Station Argentia in Newfoundland. From here she proceeded to the UK arriving in British waters on 20 April, 1944. *HMS Torrington's* primary role was to provide escort duty in the English Channel, North Sea, and North Atlantic Ocean, before transferring to Coastal Forces as a control frigate.

HMS Torrington started her patrols at the end of April 1944. Most of April and May were quite, there being only seven nights when the enemy put to sea. These excursions were mostly mine laying, and contact was avoided. The exception was the night of 12/13th May when a large group of E-Boats attacked a convoy off Selsey Bill. They were driven off only to run into the patrol line of *HMS Stayner* and *HMS Trollope* and the French destroyer La

Combattante. The German boats broke off the action after 10 minutes, and retired having had one E-Boat sunk and several others damaged to the cost one damaged MTB.

Prior to the D-Day landings (6th June, 1944) *HMS Torrington*, as part of the 1st Destroyer Flotilla, remained at Portsmouth. During the assault the 1st Destroyer Flotilla set out as part of the screening force for the eastern flank of the assault force. After the D-Day landings had taken place *HMS Torrington* saw combat on 21 July, 1944 when in the company of *HMS Melbreak* (L73). Both ships engaged a German destroyer and four E-boats off Cap d'Antifer, France. This ensured they did not disrupt the build-up of Allied supplies supporting the Normandy bridge head.

Due to the rapid advance of allied ground forces the E-Boats had to operate out of bases from Rotterdam and IJmuiden, off the North Sea. By the 4th September, 1944 they had re-organised themselves, their main targets now being the convoys heading up the Scheldt Estuary to the captured port of Antwerp. In response to this the Coastal Forces Control Frigate's also relocated to the bases of the Nore Command, at Sheerness and Harwich. They now patrolled the area off the Kent and Suffolk coast.

HMS Torrington's patrol line was off the Goodwin Sands. On Christmas day the Asdic operator made a contact as she was anchoring for the crews Christmas lunch. After a successful depth charge attack two survivors appeared on the surface confirming a midget submarine (Neger) had been destroyed. On 22nd/ 23rd January, 1945 *HMS Torrington* was also successful in disposing of another Neger midget submarine. This was the start of combined E-boat and midget submarine attacks. The last recorded sinking of an E-Boat by the original Coastal Forces Control Frigate's was by *HMS Seymour* on the night of 1 March, 1945. After a swift and decisive action she sank S220 one of the new class of E-Boats. After this sinking it was left to the Seahundes to continue the attacks on allied shipping. It was during one of *HMS Torrington's* coastal patrols on 11th March, 1945 off Ramsgate that she sighted, intercepted, then sank *U5377* (Fig. 02). Then 2 days later on 13th, March 1945 *Torrington* sank a second Seehund off Dunkirk, France. As part of the Nore command *HMS Torrington* continued to patrol the area right up to the end of the war.

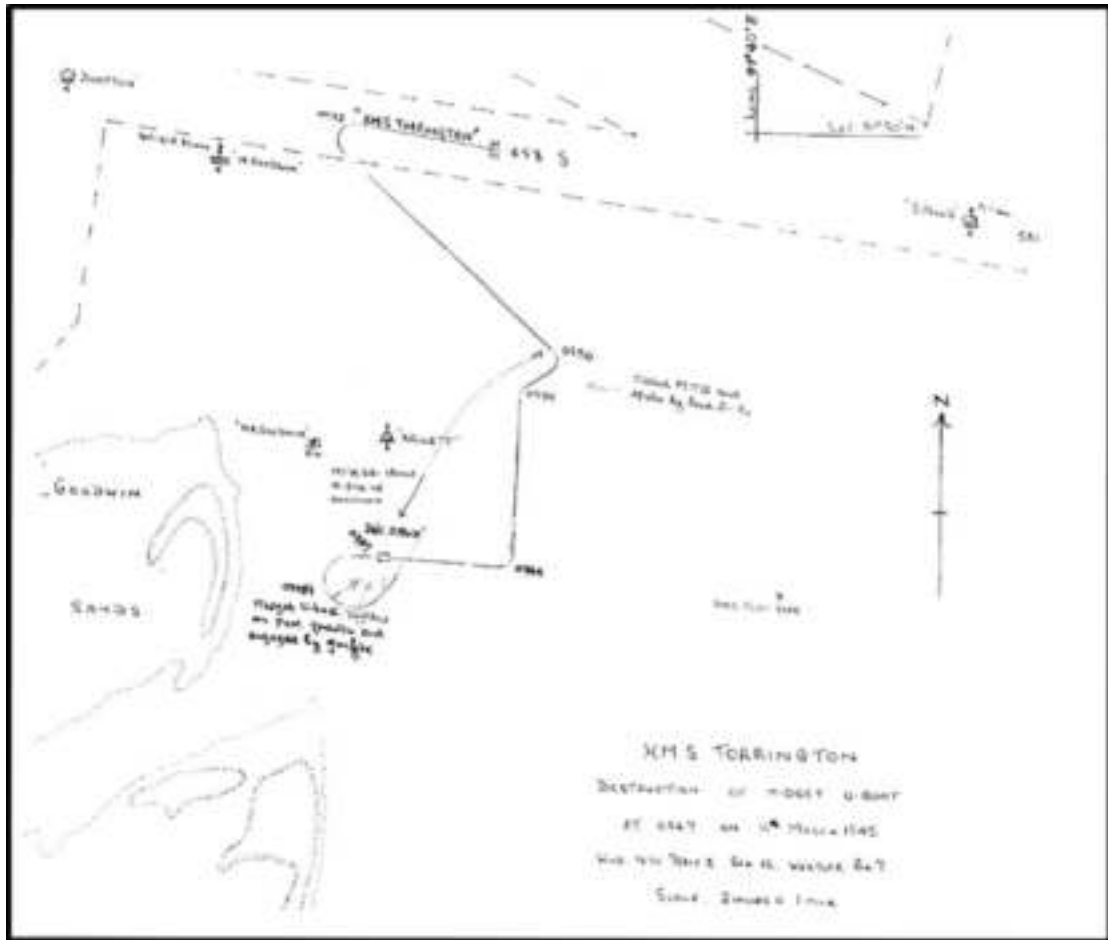


Fig. 02 HMS Torrington's report of the sinking of U5377.

Seahunde (Type XXVII)

The Seahunde (also known as Type XXVII) was designed in 1944, and operated by a two man crew. These midget submarines were only used by the German Navy during the closing months of the war. Its origins lay in the recovery of the British X-craft (X6 and X7) in Kaafjord, Norway. They were lost during lost during Operation Source, the attempt to sink the battleship *Tirpitz*.

Type XXVIIA

After an inspection of the 2 British boats Hauptamt Kriegsschiffbau produced a design for a two-man submarine designated Type XXVIIA and named Hecht (Pike). The Pike, though designed to carry explosive charges to be laid beneath enemy ships, was smaller than the British X-craft and had dispensed with a dual diesel/electric propulsion system, relying instead on an electrical motor. As such it had a limited duration and was akin to the British Welman submarine. Up to 53 Hechts were constructed between May and August 1944, but none saw active service instead being used to train Seehund crews.

Type XXVIIB

A variant of the Pike was the Type XXVIIB. This had a greater range having

diesel/electric propulsion and could carry two G7e torpedoes. Its design was completed at the end of June 1944 and varied from the Pikes by having; a better boat-shaped external casing for improved sea keeping while surfaced,

- saddle tanks for greater range,
- additional room inside the pressure hull,
- batteries moved to the keel,
- two torpedoes slung externally in recesses in the lower hull,
- a 22 hp diesel engine for surface use,
- an estimated to give a surfaced speed of 5.5 kn (10.2 km/h; 6.3 mph),
- a 25 hp electric motor for submerged use,
- a submerged speed of 6.9 kn (12.8 km/h; 7.9 mph).

Type XXVIIB5

The final variant of the Type XXVII was to become known as the Seehunde ("Seal") or Type 127. This variant had in addition to the Type XXVIIB:

- a small raised platform midships,
- air intake mast,
- magnetic compass,
- a fixed 10 m (33 ft) periscope,
- a clear dome which could survive depths of 45 m (148 ft).

The submarine's fixed periscope incorporated lenses to allow the crew to check the sky for aircraft before surfacing. It was this variant that became known as the infamous Seehunde (Fig. 03).

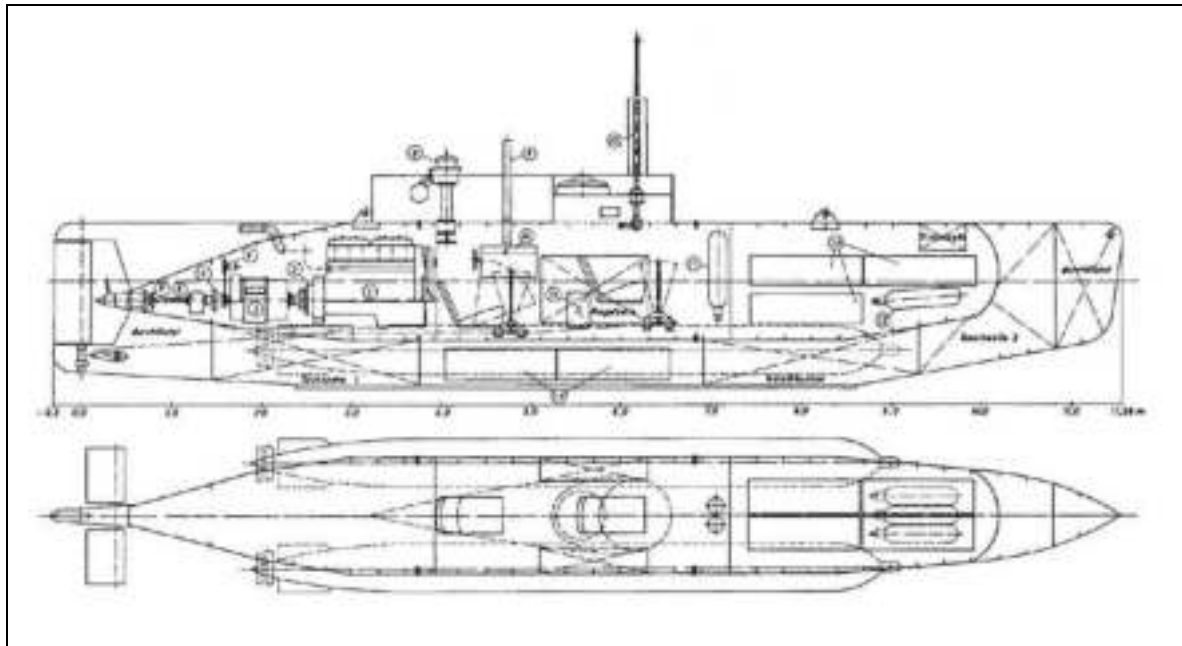


Fig. 03 Type 127 Seahunde constructional drawing.

Production of Type 127 Seahundes

The first contract for Seahunde construction was placed on 30 July 1944. A total of 1,000 boats were ordered, with production at Germaniawerft and Schichau-Werke. Other production centres included CRD-Monfalcone on the Adriatic and Klöckner-Humboldt-Deutz at Ulm. Shortages of raw material, labor and transport problems, and conflicting priorities in Germany's economy all combined to reduce Seahunde production. In the end the final Seahunde production was carried out by Germaniawerft at Kiel (Fig. 03) using a facility which was no longer needed for the larger Type XXI or Type XXIII U-Boats. A total of 285 Seahundes were constructed and allocated numbers in the range U-5501 to U-6442. This was a mammoth task in the confines of war torn Germany as the allies streamed into occupied Europe and bombed the industrial heart land of Germany with impunity.

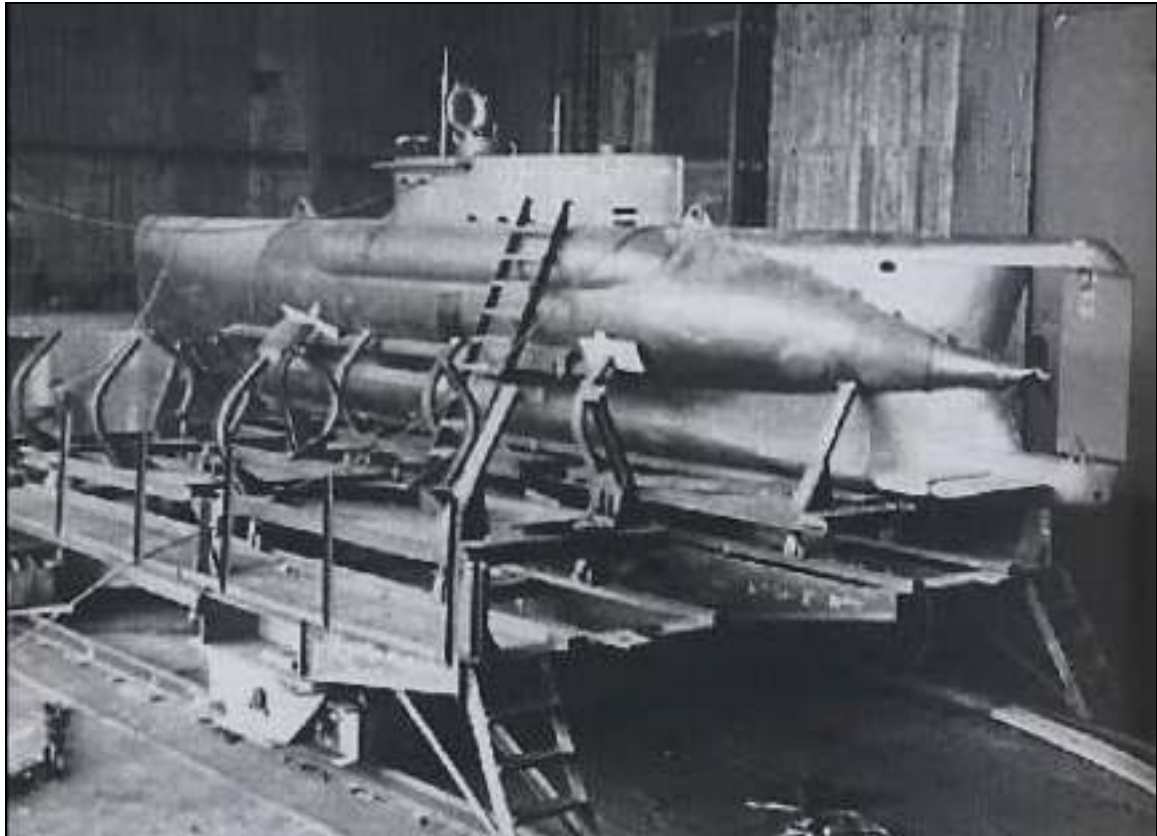


Fig. 03 A Seehunde in the Konrad bunker at Kiel, May 1945. (Mattes)

Operational service

Seehundes operated around the German coast of the North Sea and in the English Channel (Fig. 04). They could attack on the surface in turbulent weather, but had to be almost stationary for submerged attacks. From the January to April, 1945 Seehundes performed 142 sorties, during which they sank 8 ships for a total of 17,301 tons and damaged 3 ships for a total of 18,384 tons. A total of 35 Seehundes were lost in action.

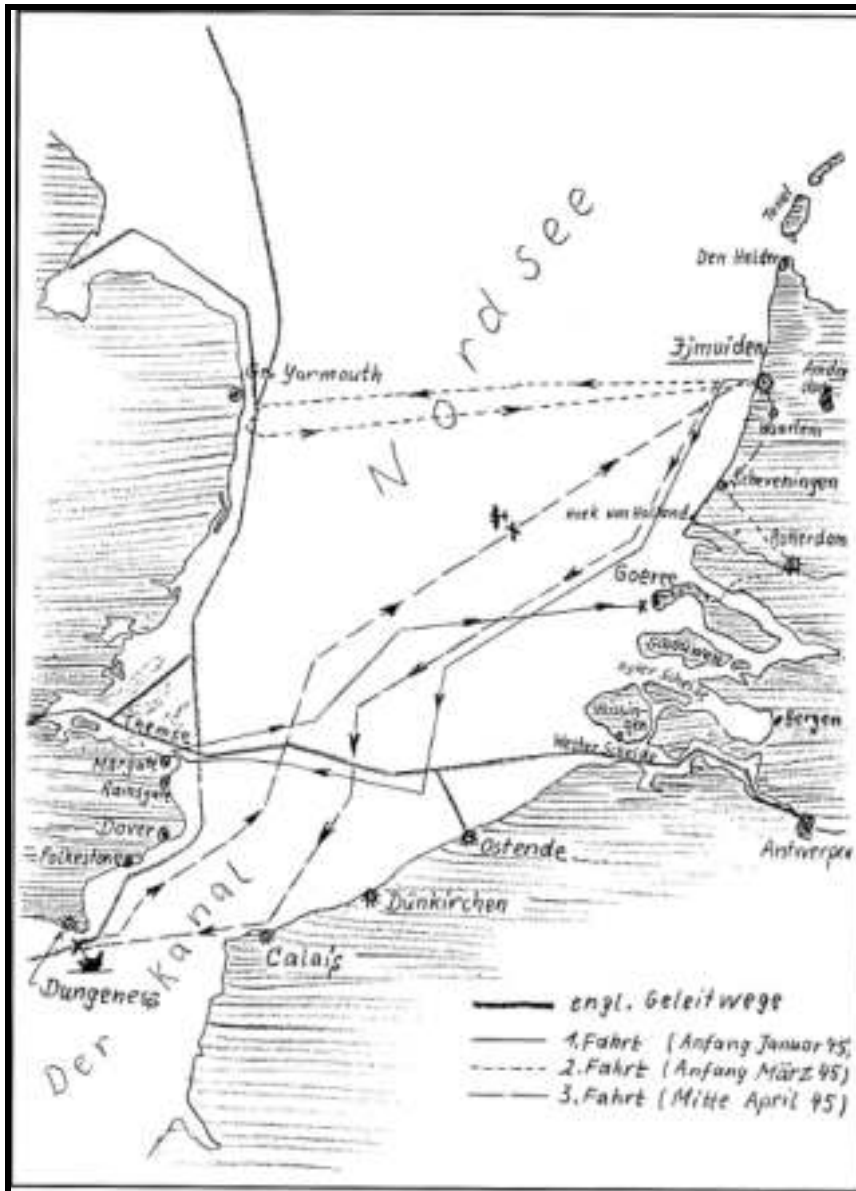


Fig. 04 Seahundes operational areas in the North Sea and English Channel (Mattes)

The area off the Goodwin Sands, being a chocking point at the eastern end of the English Channel, was a favourite area of operation for Seahundes, with Ramsgate the prime destination. This area was patrolled by *HMS Torrington*, still under the command of Lt. Clement Francis Parker. It was in the area of the Goodwins Light buoy that *U5377* was ordered to patrol and sink all allied shipping that it meet. This brought it within the patrol area of *HMS Torrington* who sighted, intercepted then sank *U5377* on 11th March 1945 (Fig.05)

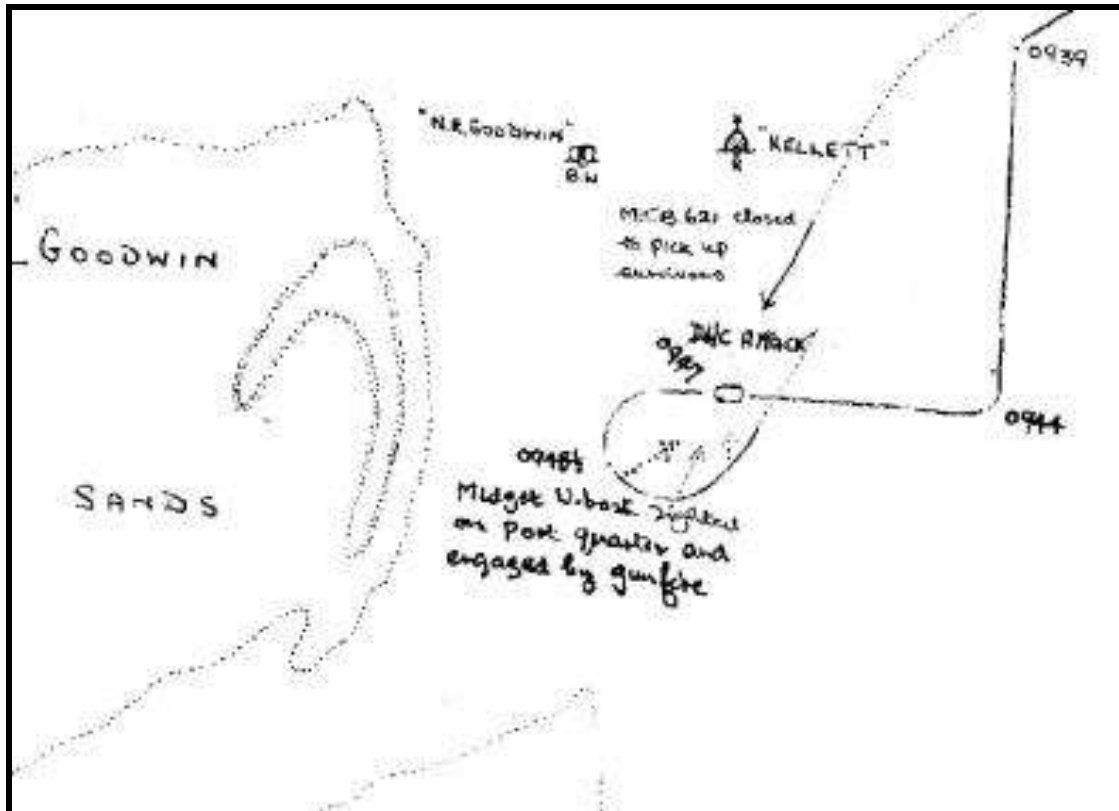


Fig. 05 HMS Torrington interception of U5377 on 11th March 1945 (Mattes)

Project Aims

Project Aim

To undertake an archaeological and biological survey of U5377.

Project Aim Results

Both archaeological survey and biological survey were achieved. The results are presented below.

Project Objectives

Objective 1

To undertake diver ground truthing of side scan sonar target to identify U5377.

Objective 1 Results

The diver ground truthing of the prime side scan sonar target and identification of U5377 was achieved. In May 2012 *SeaDive* carried out a side scan survey of the locality of the known area of loss for U5377. Fortuitously U5377 sits proud of the seabed and was the only obvious target sized side scan anomaly within the prime target area (Fig. 06). A couple of anomalies were noted around U5377 and were added to the target list for identification.

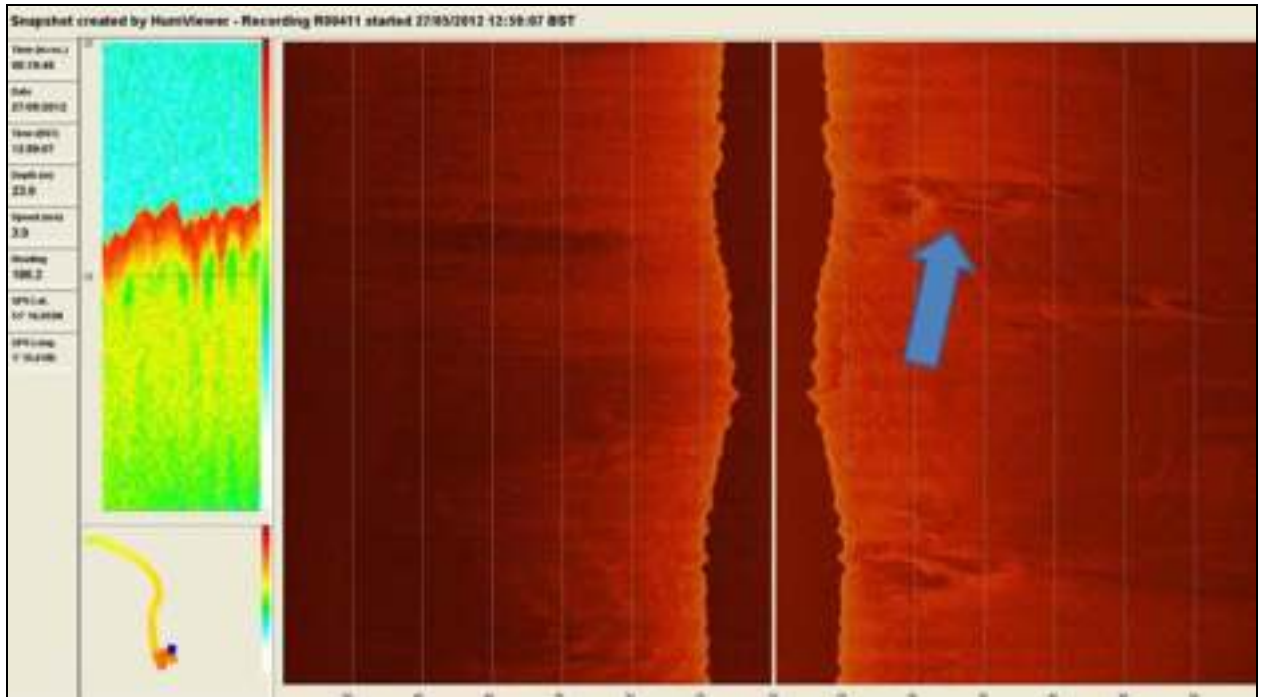


Fig. 06 SeaDive side scan survey of *U5377* highlighted by blue arrow. (Peacock)

A dive plan was formulated to investigate the prime target and hopefully identify it as *U5377*. This required the location and recording of diagnostic features to confirm the side scan anomaly as *U5377*. These diagnostic features were listed in consultation with Klaus Mattes the leading world authority on Seahundes (see methodology section).

Objective 2

To record the exposed structure of *U5377* and the marine life closely associated with the wreck.

Objective 2 Results

Once *U5377* was found and identified the primary objective was to carry out an archaeological survey of it. This was done by a measured survey of *U5377* structure, the results of which were used to annotate a constructional drawing of a Type 127 Seahunde (Fig. 07). Digital stills and video accompanied the recording (see methodology).

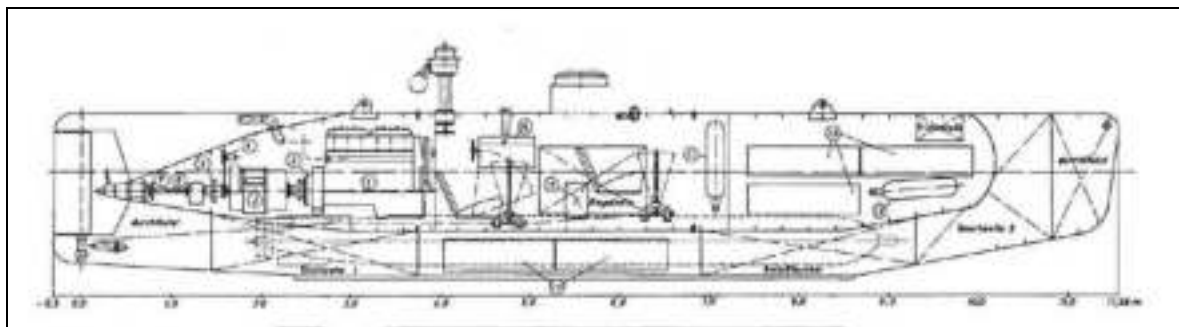


Fig. 07 Annotated constructional drawing of a Type 127 Seahunde to show what

remains of *U5377* (*SeaDive*).

Condition report (Fig. 08)

The hull of *U5377* is in relatively good condition considering its age underwater and the strong tides that run over it. The outer hull is still intact with no obvious breaches or holes, bar the opening of the nose seam. This is interpreted as damage caused when the *Seahunde* drove into the seabed upon sinking. The cowlings that went around the conning tower, periscope, projector compass and air intake has all but disappeared along with the periscope and perspex hatch cover of the conning tower. At the stern the rudder assemblage is intact and consists of propeller cowlings with iron propeller still inside. External fittings include the torpedo rails and firing mechanism and the 2 lifting eyes. The remains of the side mounted saddle fuel tanks have rotted away but their outlines can still be seen and on the starboard side one small tank is still *in situ*.

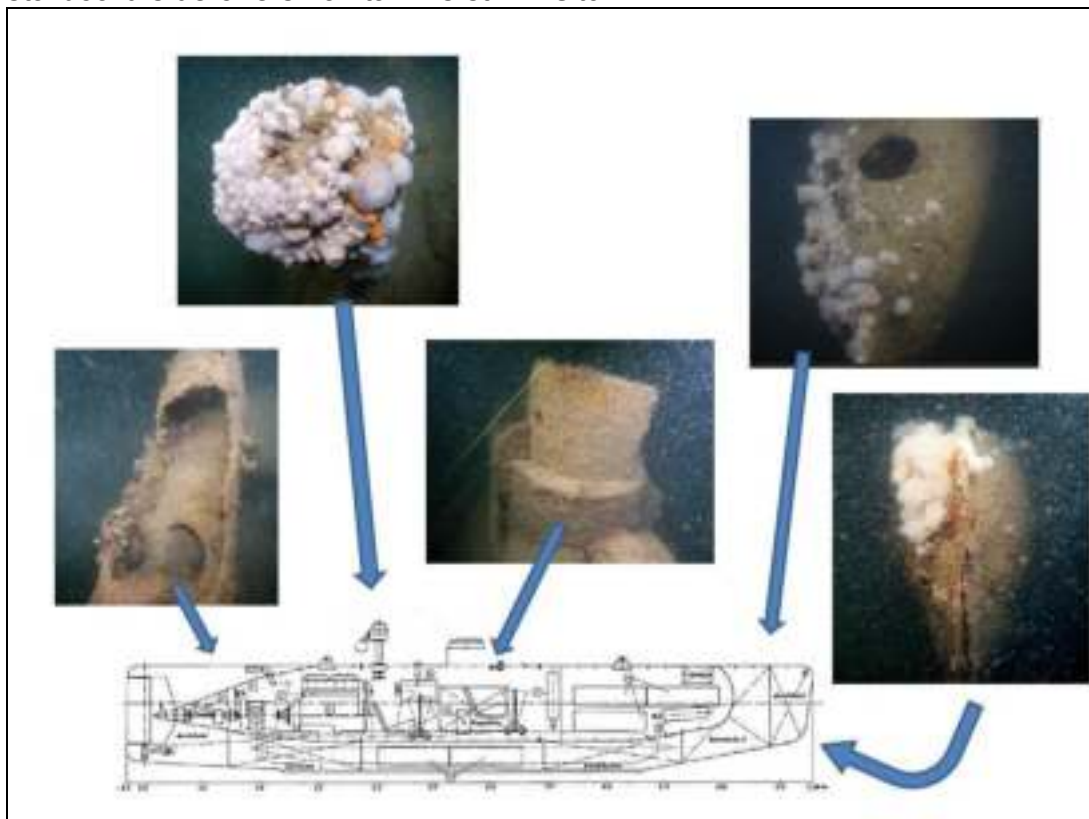


Fig. 08 Condition survey showing surviving elements of *U5377*.

Biological survey

The flora and fauna found on *U5377* was record on SeaSearch observation forms (Fig. 09). Transits 30 meters to the north, south, east and west of the site were also surveyed. These transits were laid to coincide with known side scan anomalies, which were also investigated. All observations were transferred to the Seasearch forms.

SeaSearch
Observation Form

seasearch
www.seasearch.org

The data on this form is for use in the SeaSearch database. It is not to be used for any other purpose. Please do not alter the data on this form. If you have any questions, please contact the SeaSearch team.

Please complete the following information in a clear and legible hand.

Site Information

Site ID: U5377 Date: 27/7/13 Time: 14:30 Observer: [Name]

Site Description

Site Name: SEA MOUNTS Site Type: [Type] Site Size: [Size] Site Depth: [Depth]

Observation Data

Date: 27/7/13 Time: 14:30 Tide: [Tide] Weather: [Weather] Wind: [Wind] Current: [Current] Visibility: [Visibility] Temperature: [Temp] Salinity: [Salinity] pH: [pH] Dissolved Oxygen: [DO] Chlorophyll a: [Chl a] Chlorophyll b: [Chl b] Chlorophyll c: [Chl c] Total Chlorophyll: [Total Chl] Suspended Solids: [SS] Total Suspended Solids: [TSS] Total Dissolved Solids: [TDS] Total Phosphorus: [TP] Total Nitrogen: [TN] Ammonia Nitrogen: [NH4] Nitrate Nitrogen: [NO3] Nitrite Nitrogen: [NO2] Total Ammonia Nitrogen: [TAN] Total Nitrate Nitrogen: [TNO3] Total Nitrite Nitrogen: [TNO2] Total Ammonia Nitrogen + Nitrate Nitrogen + Nitrite Nitrogen: [TAN+TNO3+TNO2] Total Ammonia Nitrogen + Nitrate Nitrogen: [TAN+TNO3] Total Ammonia Nitrogen + Nitrite Nitrogen: [TAN+TNO2] Total Ammonia Nitrogen + Nitrate Nitrogen + Nitrite Nitrogen: [TAN+TNO3+TNO2]

seasearch
www.seasearch.org

Thank you for your participation in our SeaSearch Survey

Fig. 09 SeaSearch observation form. The results of the biological survey of the site of *U5377* proved it to be an oasis in a barren seascape. The structure of *U5377* was covered in an abundance of sea life. The side of *U5377*, which was side onto the tidal flow was covered in a hard encrustation, most probably due to the rusting of the hull. This rough surface layer upon close inspection seemed to collect light silt and had layers of common mussels in clumps throughout (Fig. 10). Velvet crabs appeared to graze over this layer during slack waters.

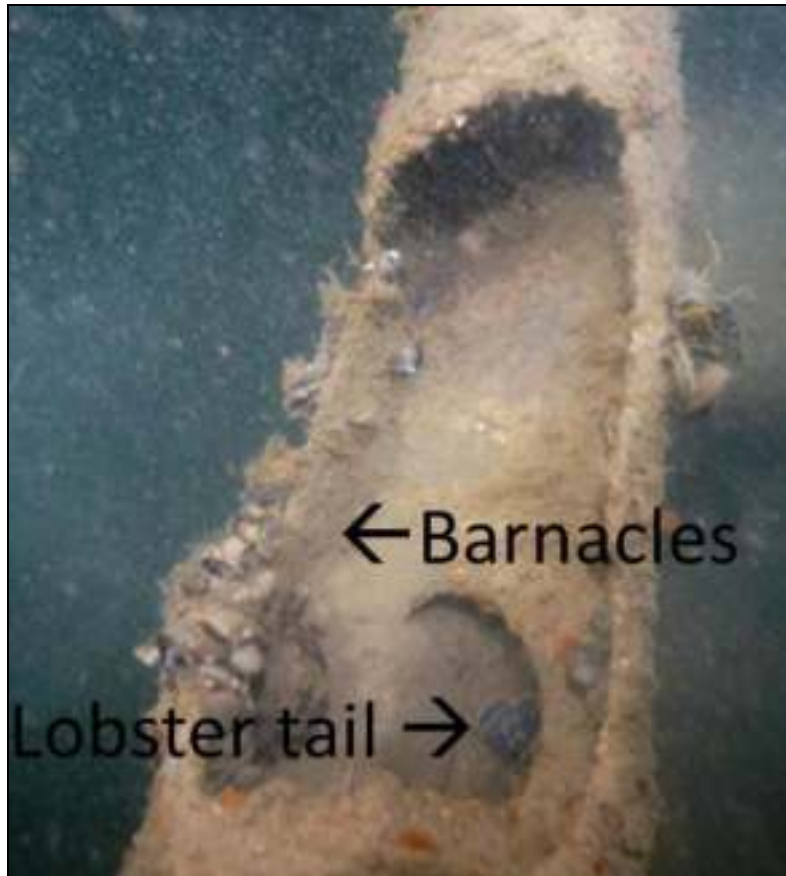


Fig. 10 Lobster and barnacles on *U5337* (Peacock).

The hull of the *U5377* was festooned with white dead man's fingers, gooseberry sea squirts, as well as white and red plum anemones intermingle with yellow sponges (Fig. 11). As noted above the top of the conning tower was missing, therefore the inside of *U5377* had silted up. However, harboured in here and within the propeller shroud were lobsters, and a number of edible brown crabs, and common brown prawns. A few squat lobsters were also noted in the remains of the fin cowling, and a large lobster was noted in the actual hull.

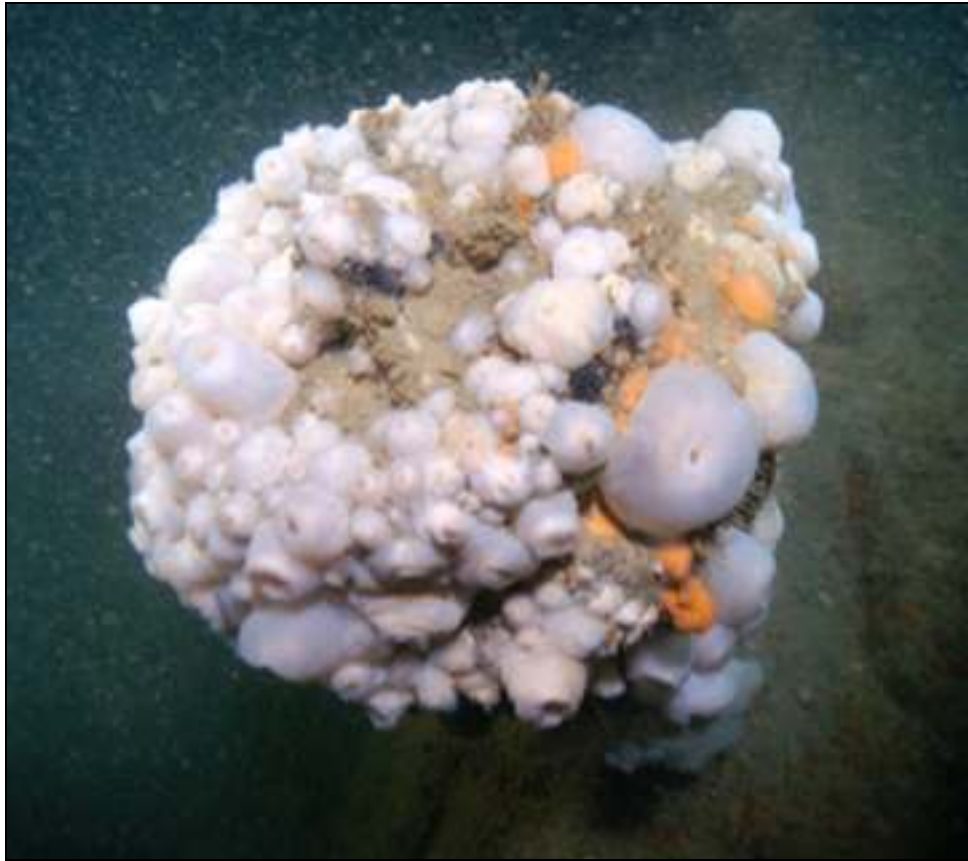


Fig. 11 *U5377's* intake mast was festooned with spectacular marine Flora. (Peacock)
Around *U5377* is a scour pit at least 3 metres deeper than the surrounding seabed. In here were noted lighter silts, which have fallen out of suspension in the lee of hull. The fauna in here included velvet crabs, common hermit crabs, a few common starfish and a single lesser spotted dogfish.

Immediately as you swim away from *U5377* the flora and fauna disappears. The seabed is a chalk bed rock, with heavy gravel overlain with sand waves and interspersed with large flint nodules. It is barren from the bottom of the scour pit to the seabed. No recognisable flora or fauna bar a few tube worms were noted.

Objective 3

To contribute knowledge of the site through the production of a field report.

Objective 3 Results

This report constitutes the 2012 archaeological field report on the site investigation of *U5377*. This will be added to next seasons (2013) data from the site visit to *U5377* and will then be submitted to English Heritage and the National Monuments Record. All biological survey reports have been submitted direct to SeaSearch by the divers who filled them in. An abridge version of the archaeological report and biological investigation of *U5377* is displayed as a website at www.Seahund.co.uk. Edited video is presented on YouTube and personal Facebook sites of key personnel.

METHODOLOGIES

Survey Methodology

Last Know Position of U5377

On the 11 March, 1945 *HMS Torrington* oversaw the engagement of a Seahunde in the vicinity of the Goodwin Sands. This was later identified as *U5377*. *HMS Torrington* engaged and sank the Seahunde *U5377* at 09.48:30. The crew abandoned the Seahunde and were recovered by *HMS Torrington* and landed ashore at Ramsgate. The reported position of the Seahunde is given in *HMS Torrington's* reports. The noted position of *U5377's* sinking was transferred to a modern day chart and an area 0.5 miles square around this spot was considered the prime target area. This area is located off the north eastern part of the Goodwin Sands as the northern mouth of the area called Kellets Gut. This area was to be searched first. If *U5377* was not found within this area then the search area would be made larger towards the North Goodwins buoy and just south of Kellets Gut (see Fig. 12)

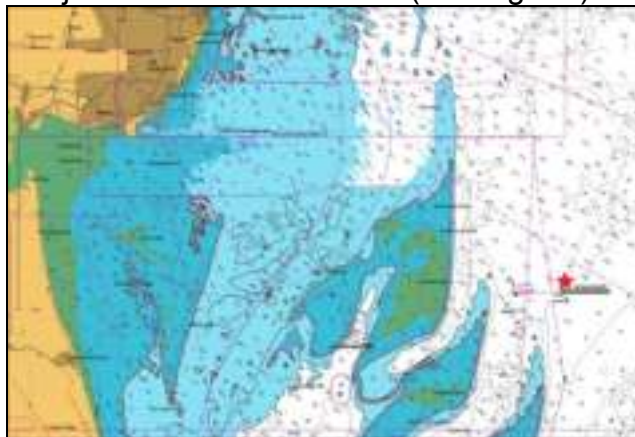


Fig. 12 Prime search area for *U5377*. The red star is the estimated position based on *HMS Torrington's* sinking report.

Search Methodology

A hull mounted side scan sonar was used to carry out a box search of the prime target area. From the read out of this side scan sonar a number of anomalies fitting the known size of a Seahunde would then be selected for diving to see if they were *U5377*. A single anomaly which was the correct length and looked like a submarine and was surveyed within the prime location of *U5377* sinking was considered to be *U5377* (Fig. 13).

The area to be searched has a charted depth of between 17 and 27 meters. The expected average maximum depth within the survey area on neap tides is 24 meters, and for the estimated position of the Seahunde of 24m. This meant all divers had to be Dive leaders or Advanced divers to be part of Operation Seahunde.



Fig 13 Sidescan sonar image of *U5377*. (Peacock)

Diving Methodology

Seabed Topography

The general seabed topography consists of a chalk seabed covered by flints and gravel overlain by large track of sand waves up to 1 meter in height. Larger sand waves up to 2 metres in height are known to track across the area.

Tidal Conditions

The tidal conditions consist of strong tidal currents during spring tides which back off to over 2 hours diving time either side of slack on neaps. The project diving times were scheduled only for neap tides due to neaps giving longer diving times and shallower maximum depths.

Diving Management

All diving was organised and managed by SEADive as part of The British Sub-Aqua Jubilee Trust sponsorship. Prior to commencement of any diving operations all divers were required to produce proof of;

- their diving qualifications,
- medical fitness to dive,
- cylinders in date and regulators working,
- evidence of third party insurance.

All diving on Project Seahunde was undertaken using open circuit scuba equipment with the exception of one team member who dived using a closed circuit re-breather. All dives were carried out in buddy pairs with each buddy pair given a recording task. The rules and regulations of their certifying organisations were followed by all divers.

Prior to leaving Ramsgate harbour the local coastguard were informed of the

diving operations. Prior to each dive the project team were briefed on:

- the dive plan,
- current and forecast weather conditions,
- current and forecast tidal conditions,
- boat and diving procedures (entering and exiting water),
- survey and recording methods,
- individual recording tasks,
- any health and safety issues.

Once at the site a buoyed shot was deployed just off the site for the divers to descend. Due to the local variations in tidal prediction for the area of diving the shot was designed with a series of small buoys on it. At least 3 of these had to be on the surface to ensure safe diving operations. Prior to the commencement of diving operations the international code flag Alpha was deployed. This was kept flying throughout all diving operations.

Once the 3 buoys were on the surface then the divers could commence their dive. The divers were paired up and stood at the back of the vessel whilst it motored to the shot. Once above tide of the shot the divers entered the water and drifted down stream to the shot. Upon giving an "OK" signal they would descend to the seabed. When the divers reached bottom they clipped onto the bottom of the shot and reeled out to the *U5377*. This method ensured that divers could always return safely to the shot, then to the surface to be picked up by the dive vessel (Fig. 14). After their safe recovery all divers were then debriefed.

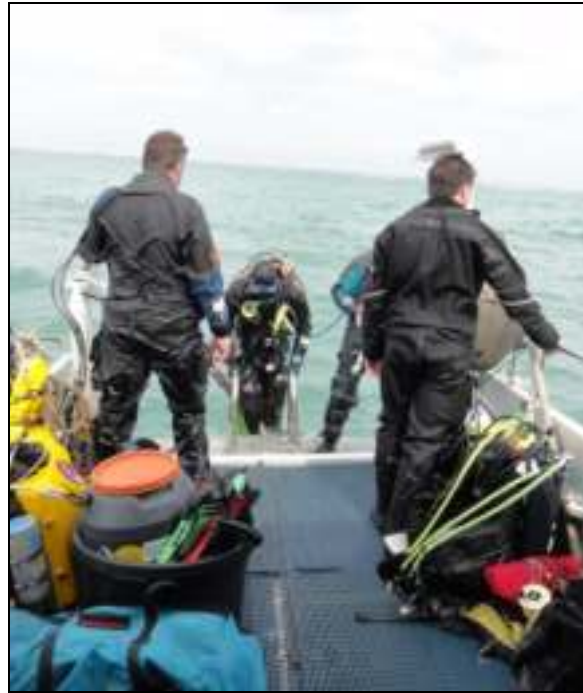


Fig. 14 Divers being recovered aboard after a safe dive. (Mattes)

All diving operations were carried out from the privately owned and previously MCA coded diving support vessel *Tusker II* (Fig. 15). The capacity of the boat is 12 divers and it proved to have excellent facilities for undertaking archaeological and biological projects including;

- Open rear deck,
- Dive ladder
- 1 ton winch
- 1 ton crane for diver recovery if required
- Toilet
- Galley for cooking and hot drinks provision
- O₂ if required.



Fig. 15 Tusker II used for all diving and surveying. (Peacock).

Number of Dives

A total of 23 dives conducted by 12 different divers were carried out during Operation Seahunde. The average dive time was 36 minutes ranging from 25 minutes to 45 minutes bottom time. All dives included decompression for safety. Total dive time was 828 minutes which equates to 13.8 hours on *U5377*. Only 2 dives were aborted due to bad weather. The key project divers are listed below.

Name	Dive Qualification
Douglas McElvogue	BSAC Advanced Diver
Robert Peacock	BSAC Advanced Diver, Open Water Instructor
Peter Pashley	BSAC Dive Leader
Nigel Harrison	BSAC Dive Leader
Keith Clark	BSAC Advanced Diver, Open Water Instructor
Innes McCartney	CCR and Trimix Diver
Klaus Mattes	Project Historian (Non-diver)

Recording Methodology

The archaeological recording methodology included direct measurements of hull features from the either stern or bow to the feature being recorded. These direct measurements and sketches were then used to annotate a

constructional drawing of a Type 127.

Digital stills were taken of all important constructional features. These included where possible some form of scale. On the 2 good days where visibility coincided with slack water then a digital video was done. This started from the stern and progressed forwards to the bow then returned to the stern again.



Fig. 16 Diver recording diagnostic features or evidence for them on U5377.
(M^cElvogue)

Diagnostic Features

The team of Operation Seahunde were fortunate to have the assistance of the world leading authority on Seahundes, Mr Klaus Mattes. Mr Robert Peacock corresponded with Klaus prior to the commencement of Operation Seahunde to tell him of our endeavours (Fig. 17). As a Seahunde enthusiast Klaus not only gave freely the research used for this report but also highlighted the features needed to be found to prove the side scan sonar image was *U5377* beyond any doubt. These diagnostic features were:

- Length overall
- Height of body of Seahunde
- a small raised platform midships,
- air intake mast,

- magnetic compass,
- a fixed 10 m (33 ft) periscope,
- a clear dome which could survive depths of 45 m (148 ft).
- torpedo rail either side of the hull
- nozzle propeller guard, not a twin rudder.



Fig. 17 Seahunde expert Klaus Mattes over the site of U5337. (Peacock)

All the above noted features were found or evidence for them was found on the prime side scan target, identifying it as *U5377* (see Fig. 08). Below is a table of constructional measurement against actual measurements.

Dimensions	Feet	Metres	Actual
Length	38.9ft	11.85m	11.96m
Beam	5.6ft	1.7m	2.0 m
Diameter	4.2ft	1.28	Estimated 1.30m

Biological Survey

The marine biological survey was conducted in 2 ways;

1. Surveying relative to the structure of *U5377*. Survey Relative to *U5377* were entered into the *SeaSearch* proforma sheets. A total of 6 proforma sheets were filled in and sent to *SeaSearch* to enhance their dataset.

2. By survey transects. The Transects were swum by divers swimming on a predetermined compass bearing and up to 20m distance away from *U5377*. The transect length varied due to poor visibility an increase in tidal current and lack of bottom time to make continuing safe.

Marine organisms were identified as best as possible and counted to within a

1m square either side of each transect. Digital stills were taken using a with the measuring tape in the field of vision to help cross validate percentage cover, as well as habitat descriptions and species identification. The distance along the transect measurement tape was recorded at every boundary between *U5377* and its surrounding environment. However as no recognisable flora or fauna there is no record to present.

British Sub-Aqua Jubilee Trust Promotion

As part of Operation Seahunde the team produced a poster (Fig. 17) which was taken to conferences and events throughout the UK. These are listed below. A preliminary article was produced for Nautical Archaeology Society newsletter and further articles are planned following on from this year's dives (2013). A website has also been designed and made by Keith Clarke and put up on the internet (www.seahund.co.uk). All posters, websites and conference talks recognised and promoted the funding from the British Sub Aqua Jubilee Trust. Youtube video consist of:

- Seehund U5377
(<http://www.youtube.com/watch?v=Bjarwqel2w0&list=UUxGRFB3W6ANKGbBPBDGqX1Q&index=3>)
- Klaus.Mattes oral history of a Seehund
(http://www.youtube.com/watch?v=tWZSetU_gc&list=UUxGRFB3W6ANKGbBPBDGqX1Q&index=2)



Fig. 17 Operation Seahunde poster displayed at conferences. (Clark)

Conference Attended	Date	Location
Nautical Archaeological Society Conference	Nov, 2012	Portsmouth, UK.
Society of Historical Archaeology	Jan, 2013	Leicester, UK.
Shipwreck Conference	Feb, 2013	Plymouth, UK
 Future Conference to Attend		
Nautical Archaeological Society Conference	Nov, 2013	Portsmouth, UK.
Shipwreck Conference	Feb, 2014	Plymouth, UK
 Articles Produced		
<i>Project Seahunde</i>	Winter 2013	NAS Newsletter

Results

Operation Seahunde, the search and survey of *U5377*, can be classed as an unequivocal success. The unknown location of the *U5377* was found, identified and surveyed. Operation Seahunde with the support of the British Sub Aqua Jubilee Trust has allowed for:

- the location of a significant part of our maritime heritage to be known,
- a significant part of our maritime heritage to be recorded for prosperity,
- the recording of the flora and fauna of a site with a known deposition history,
- allow the site to be used as a standard for understanding the colonisation of such manmade structures on the seabed,
- added to the known biological habitats in or just outside of a possible marine protection zone.
- generate a baseline biological survey for a relatively understudied part of the UK's inshore habitat.
- generated public interest in the little known Seahundes and the Coastal Forces of the Royal navy that defended our shores.

Future research possibilities

Project Seahunde has created a sense of stewardship for *U5377* amongst the project team. As such SeaDive will endeavour to ensure;

- annual Biological surveys of *U5377* are reported to SeaSearch,
- annual dive and survey to monitor sites degradation,
- further archival research will be undertaken into the sites history and the personnel involved,

Conclusion

This report constitutes just one aspect of *U5377* investigations. The enthusiasm for Project Seahunde went beyond just finding and diving *U5377*. It brought a team of enthusiastic amateur divers together, to work towards one goal to relocate *U5377*, survey it and then publish their findings in due course. Further to this, it saw international collaboration flourish, and new friendships forged (Fig. 18). Without the support of the British Sub-Aqua Jubilee Trust this could not have been done.



Fig. 18 Members of Operation Seahunde visiting Germany to see other Seahundes with Klaus. (McElvogue)

ACKNOWLEDGEMENTS

The project could not have been initiated without the full support of Mr Robert Peacock of SeaDive Organisation. Mr Peacock (Fig. 19) gave his time generously, allowed the use of his boat and its facilities as well as boarding and lodging for those who stayed more than 1 day. His initial side scan survey of the area relocated *U5377* for the first time. The British Sub-Aqua Jubilee Trust must also be thanked for their generous grant. Thanks also go to BSAC 106 for allowing us to refill cylinders using their compressor. Klaus Mattes must also be thanked for his great enthusiasm and for giving freely of his wealth of knowledge on the Seahunde. All photo credits are his unless otherwise stated. Keith Clark is also acknowledged for making Project Seahunde Poster and the Project Seahunde Website.



Fig. 19 Robert (Bob) Peacock after another successful dive on *U5337*. (Mattes)

REFERENCES

This report is primarily based on the research freely given by Klaus Mattes. This is available in his book *Die Seehunde*.

Klaus Mattes, 1995, *Die Seehunde, Klein-U-Boote Letzte deutsche initiative int Seekrieg 1939-1945*. Mittler & Sohn, Germany.

The information on Captain class frigates was taken from the Captain class frigate website.

<http://www.captainclassfrigates.co.uk/ops/coastcom.html>